

STUDIES IN NEARCTIC DESERT SAND DUNE ORTHOPTERA, PART XVI:
A NEW BLACK *STENOPELMATUS* FROM THE MESCALERO SANDS

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ABSTRACT.— *Stenopelmatus mescaleroensis* is described from New Mexico as new to science. A key to the *Stenopelmatus* of the United States is presented with notes on chaetotaxy used for these crickets.

In 1959, while studying the environmental relationships of sand dune biotae, one of my study areas was the Mescalero Sands, 45 miles east of Roswell, New Mexico. This extensive sand area, covered with scrubby oak, is one of many in the Pecos Desert, most northern of three eremological components of the Great Chihuahuan Desert. On the night of 6-7 July and on the night of 12-13 September, 1959, I took a black Jerusalem Cricket on each of those nights. Again, the evening of 6 September 1978, as the sun was setting, I collected 6 additional specimens, most of which were crawling actively across the dune blowouts surrounded by scrub oak. Before describing this species I wish to comment on the chaetotaxy of stenopelmatid crickets.

Because considerable confusion has existed concerning definition in the chaetotaxy of these orthopterans, I wish to define and unify ideas about their leg spination. Spines are usually small to large, solid, immovable projections, acuminate in form, such as those found along both external and internal dorsal margins of the methathoracic tibiae. In the past these have often been referred to as teeth. Spurs, on the other hand, have movable bases, and like the spines are small to large and acuminate or aciculate in form. Calcars are those very large spurs situated at the apices of all tibiae, and these are of considerable value in taxonomy, because in some species the posterior apical face is sometimes truncate and spatulately enlarged for digging or pushing in the sand or soil. In *Ammono-*

pelmatatus and *Viscainopelmatus*, these calcars are very short, even, and spatulately enlarged for sand propulsion. Whether the basal dorsal spines of the caudal tibiae are smaller or larger than those more apical spines is also of key importance.

Stenopelmatus mescaleroensis, n. sp.

Description: This species differs from all American species of the genus by being totally black, although most Mexican species are black but not here considered. Size large to very large with some megacephalism present, although whether this feature is a sign of maturity in males is not clearly understood. Coloration in all other large American species of *Stenopelmatus* reddish orange to orange (desert) with much black on abdominal tergites; in smaller species such as *pictus* Scudder and *nigrocapitatus* Tinkham & Rentz, usually with shining black on head and parts of pronotum. Pronotum typical, foremargin almost squarely truncate, prozonal area broader than metazonal area so that lateral margin of prozona considerably constricted into lateral margin of the metazona, which posteriorly is very broad rounded into short truncate posterior margin. Abdomen typical of genus. Head broader than prozona of pronotum; very tumid and rounded, thus indicating some megacephalism. Antennae typical.

Leg spination as follows: Cephalic legs: dorsal line of femora very strongly arcuate, lower margin almost straight; dorsal margin

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of tibiae slightly sinuate in basal third, ventral margin rounding (not keeled) and moderately arcuate with four calcars, the three most apical largest (central largest) and the fourth a short pointed calcar situated on external margin. Dorsal margin in extreme subapical position bearing a spur as large as two that flank central and largest of three apical calcars. On ventral margin are two uneven subapical spurs and one small spur located

about apical third immediately basad of most posterior of two uneven subapical spurs. Cephalic tarsus with first segment about equal to fourth, which bears claws or ungues, and almost twice length of short second and third segments; long protarsal first segment possibly composed of two fused segments.

Mesofemora much more slender than profemora; dorsal margin less strongly arcuate, lower margin almost straight. Mesotibiae



Fig. 1. *Stenopelmatus mescaleroensis* male holotype above; aggressive position below.

slightly less slender than protibiae, with four more evenly placed calcaria apically and ventral margin (upper in folded leg) bearing a pair of appressed, short, acuminate spurs in extreme subapical position and dorsal margin (ventral in folded leg) bearing four strong acuminate spurs, two exterior placed about centrally and one in apical four-fifths; two internal at about apical third and basal one-third. Middle tarsus much as in cephalic tarsus with strong evidence of a central constriction in first long mesotarsal segment, thus indicating fusion of two segments.

Caudal legs: Caudal femora with dorsal margin strongly arcuate in lateral profile and rounded (not keeled); ventral margin relatively straight with founded inner and outer keels. Caudal tibiae heavily constructed with ventral margin (dorsal in folded legs) arcuate with one pair of large, appressed, acuminate spurs just basad of two large central calcaria; dorsal margin (ventral in folded legs) straight and bearing 3 external spines in apical half and increasing in size apically, largest and most apical with posterior distal portion truncate and slightly spatulate, internal margin bearing 5 strong spines from near base to apex, all increasing in size distally, most apical, largest, with its apical posterior face truncate. Protarsi with first segment half length of entire tarsus, with strong evidence that first segment is composed of two fused segments.

Abdomen: with a pair of black uncinate hooks just interad of bases of white, hairy, erect cerci; this feature taken as proof of maturity of male specimen.

Measurements in millimeters by calliper: Type male, Mescalero Sands, 45 miles E Roswell, New Mexico, 6 Sept 1978, 7 p.m. E. R. Tinkham. Body length 38.5 mm; head breadth 11.2, depth (vertex to base of labrum) 14.0. Pronotum: prozonal width 12.1; metazonal width 11.4, length 8.5 mm. Abdominal length 24.0. Caudal femora 12 × 4.8; caudal tibiae 13.1 mm. Type in the Tinkham Eremological Collection. Paratypes: 7 males from the identical location on the extensive Mescalero Sands, all by me; two males by Mr. Jacques Helfer believed to be from the same location. One male, night of 6-7 July 1959 (after dark); one male, night of 11-12 September 1959, shortly after dark; 5

males, 6 September 1978, last two hours of setting sun; Helfer males, 1 September 1961, very well preserved by stuffing abdomen with cotton and pinning. It is interesting and unusual to have ten males and not a single female or immature to be represented in the collections. Range in measurements of paratype males: Body length 27.5-36.5 mm; head breadth 8.8-11.5 × depth 9.0-12.0 mm. Pronotum: prozonal width 8.8-12.3; metazonal width 7.8-10.3; pronotal length 6.0-8.0 mm. Caudal femora 9.9-12.3 × 3.9-5.0; caudal tibiae 9.0-12.5; abdomen 16.2-19.6; antennae 16.5-19.5 mm. Paratypes, other than size range, identical to the holotype in every respect.

Habitat: Scrub oak covered by drift-sand in areas with numerous cup-shaped depressions formed by the dune blowouts, their margins usually lined with scrub oak or a great variety of other plants, including different species of tall grass. In places there are ridges of drift sand frequented by a species of sand-treader (*Ammobaenetes*) in the spring and early summer as well as one very large area of open sand inhabited by a small herd of prong-horned antelope (as of 1959).

Flora: The Mescalero Sands have a large floral list the dunes and drift sand areas are covered with a scrubby growth of Harvard oak (*Quercus harvardii*), plus many other shrubs such as silver sage (*Artemisia filifolia*), mesquite (*Prosopis juliflora*), Bear Grass (*Yucca elata*), the delicate blue-flowered *Commelina communis*, the fragrant snowball flower (*Abronia fragrans*), the white-flowered *Solanum alba*, plus *Asclepias*, *Gilia*, *Oenothera*, *Cryptantha*, composites, cacti, and many grasses.

Orthopteran associates: In the fall and probably in the spring, as my fall collecting shows, this new black Jerusalem Cricket is active in the setting sun when it crawls rapidly across the large sandy blowouts. Orthopterans at this time include such acridids as *Trimerotropis citrina neomexicana* (the type locality; fairly common), the rarer *T. pallidipennis salina*, the rare *Spharagemon collaris cristatum*, the very abundant *Schistocerca alutacea* and *Melanoplus gilaensis*, the slant-faced *Eremiacris virgata*, as well as a great number of other acridids, stick insects, and mantids. In the early summer *Xanthippus*

montanus and *X. corallipes*, *Mestobregma* and *Arphia*, as well as many more are present. Nocturnal associates include: *Rehnia cerberus*, *R. (Neobarretia) victoriae*, *Pediocetes stevensoni* and *daedalus*, leaf katydids such as *Amblycorpha huasteca*, *Scudderis* spp., and many others as well as crickets. The small sand treader *Ammobaenetes* sp. on the sand ridges in the spring and summer undoubtedly is associated with the new *Stenopelmatus*. In fact, the Orthoteran fauna of the Mescalero sands exceeds 40 species. This is also the type locality of *Plagiostira mescaleroensis* Tinkham.

Enemies: a large Jerusalem cricket crawling across open stretches of sandy blowouts must be an attractive morsel for avian predators. The following predators I have seen at the Mescalero Sands: Roadrunner, American Kestrel, Red-tail and Krieger Hawks, Loggerhead Shrike, Burrowing Owl, and Great Horned Owl, all of which are potential enemies of this creature. Nocturnal mamma-

lian predators include coyotes and foxes as well as certain small predatory rodents. On the night of 13 September 1959, shortly after dark I found lying on the sands, 5 miles south of Penwell (near Crane), Texas, a freshly severed, large megacephalic head of a large reddish brown *Stenopelmatus* sp. The probable predator was the Great Plains Grasshopper Mouse (*Onychomys leucogaster articeps*), and the kill was near the western limit of the range of this rodent. Because Highway 380 cuts right through the type locality, some crickets probably are run over at night crossing its two lanes.

Faunal Designation: The newly described *Stenopelmatus* is a member of the Pecos Desert Fauna, which desert is the most northern of three eremological components of the Great Chihuahuan Desert, the other two being the Coahuila Desert immediately to the south and the high elevation Salado Desert of southwestern Nuevo Leon and of northeastern Zacatecas.

Abbreviated Key to American *Stenopelmatus*

1. Species completely black, size large *mescaleroensis* n. sp.
Species small to very large, never completely black 1
- 2(1). Species large to very large, head and pronotum orange or orange red 3
Species medium to small; head and pronotum with variable amounts of black or infuscated 5
- 3(2). Body completely orange; caudal tibial spine ratio 3 external, 3 internal
..... *cahuilaensis* Tinkham
Body reddish orange on head and pronotum, abdominal tergites largely black 4
- 4(3). Internal calcar of caudal tibiae very long and acuminate; caudal tibial spine ratio: 2 external small, 4 internal with two subapical much the largest
..... *longispina* Brunner
Internal calcar of caudal tibiae longest of the six, their posterior apical portions truncate and spatulate *fuscus* Haldeman
- 5(2). Head and pronotum dorsally shining solid black *nigrocapitatus* Tinkham & Rentz
Head and pronotum not so 6
- 6(5). Head and pronotum dorsally with black which is broken up by vertical sutural lines on head and irregularly on pronotum; caudal tibial spine ratio: 2 ext. 3-4 internal *pictus* Scudder
Entire body infuscated brown, with black abdominal tergites; caudal tibial spine ratio: 2 external, four internal *intermedius* Davis & Smith

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